

# THE INITIAL PROSODIC TEMPLATE IN BRAZILIAN AND EUROPEAN PORTUGUESE: A METHODOLOGICAL MATTER?<sup>1</sup>

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## 0. Introduction.

In this paper we investigate the initial prosodic template in the acquisition of Portuguese (both European and Brazilian Portuguese), by analyzing the influence of the method used in the analyses of children's early productions. As one will observe in the course of this paper, an investigation on the influence of the method underlying analyses on word shape acquisition may provide useful cues for theoretical proposals, especially in a language like Portuguese, in which the shape of early words is still under debate.

The Trochaic Bias Hypothesis (Allen & Hawkins, 1979) had a great repercussion throughout the subsequent years, especially in Germanic languages like English, Dutch and German. This work briefly reviewed the child data from some languages (English, German, Spanish, among others) and suggests that children's early words tend to have a trochaic rhythm. In a subsequent study, Allen & Hawkins (1980) undertook a production study where children aged 3;7 -6;7 were presented with non-sense words similar in segmental content, but contrasting in the stress position (e.g. [ta.'ki] and ['ta.ki]). Children perceived the difference between SW and WS words but had difficulty in producing WS (either using inappropriate stress or deleting the initial syllable). These results confirmed the results previously found, suggesting that children's early productions were biased towards a trochaic template. The authors furthermore hold that this trochaic bias was not characteristic of English, but a universal phenomenon. Since their work suggested the possibility of a universal bias, other studies have been carried out in other languages, however pointing to different results.

Following the view that there is an initial grammar, some authors dealing with Germanic languages state that the trochee is the initial prosodic template (Demuth, 1996; Fikkert, 1994; Gerken, 1994). The same is claimed by studies that deal with languages from other families (see Adam & Bat-El, 2007 on the

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acquisition of Hebrew and Prieto, 2006 on the acquisition of Catalan, for example). In general, studies on Germanic languages tend to corroborate Allen and Hawkins' hypothesis, mainly due to the fact that the early pattern emerging in these languages conforms to a trochaic word and others that do not deny the predominance of trochees but point out the presence of iambs in early speech as well (Kehoe & Stoel-Gammon, 1997; Vihman *et al.*, 1998). Studies on Romance languages, however, show different results. For instance Hochberg (1988) asserts that there is no initial prosodic bias in early Spanish but a neutral start instead, i.e. stress does not fall on any specific syllable; whereas a trochaic bias is found in Catalan (Prieto, 2006), an initial WS tendency in European Portuguese (EP) (Correia *et al.*, 2006) and in French (Demuth & Johnson, 2003; Vihman *et al.*, 1998). Interestingly, Adam & Bat-El (2007) show results that go along with the universality of trochee, though iambs are more frequent in adult Hebrew. Demuth (1996) demonstrates that trochees are the predominant foot in early speech of Sesotho, but monosyllables are found in the first stage.

Data from Portuguese-speaking children bring complications for the assumption of a universal trochaic bias, as the results point to an iambic bias instead (Baia, 2008; Bonilha, 2004; Correia, 2008; Santos, 2006, 2007). Despite the prolific discussions and studies about the initial prosodic template in Portuguese that have taken place recently (see Baia, 2008; Bonilha, 2004; Rapp, 1994; Santos, 2006, 2007), some questions still remain on the shape early words in Portuguese. Most of these studies are observational and they all suggest that there is an initial iambic tendency. On the contrary, the only experimental study undertaken (on BP - Rapp, 1994) claims for a trochaic bias.

## **1. Brazilian Portuguese: previous studies**

Brazilian Portuguese (BP) presents an interesting prosodic behavior. According to Cintra (1997), the language has more trochees (63%) than iambs (18%) and the same is supported by Albano (2001). However, the data from child language have suggested an unclear tendency or a tendency that is not consistent with frequency data in the adult speech. In the arena of Brazilian literature, spontaneous studies point out for an iambic bias in Brazilian early speech data (see Baia, 2006, 2008; Santos, 2006, 2007), whereas others - experimental - argue that there is a trochaic bias instead (Rapp, 1994; Baia, 2008<sup>2</sup>). Until recently, acoustic analyses were not carried out in order to elucidate the question on the early prosodic template in BP.

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<sup>2</sup> Recall that all experimental studies on BP acquisition deal with only one grammar class (nouns), differently from naturalistic studies, which deal with nouns and verbs at the same time.

Analyzing the spontaneous speech of a Brazilian child, Bonilha (2004) showed that there is a larger number of iambs until 1;5. After that age, the child was able to produce the adult prosodic pattern of BP (trochaic words). Baia (2008) states that the presence of an iambic bias is marked in reduplicated and in words created by the children. Based on spontaneous speech from 2 Brazilian children, Santos (2006, 2007) claims that there is an iambic bias in BP acquisition because monosyllables are produced as WS and WSW words are truncated to WS and not SW.

The results differ significantly between naturalistic studies (iambic bias) and experimental studies (trochaic bias). According to Baia (2008) the discrepancy between the two types of studies may arise from the fact that spontaneous studies consider children's reduplicated words, which are frequently produced and have an overwhelming iambic shape, while the experimental studies deal with controlled speech and usually elicit words from the adult lexicon (where no iambic reduplications are found). Adult and child speech in BP is, therefore, particularly different, from a word shape point of view, the former being mostly trochaic and the latter being typically iambic.

The hypothesis according to which an early iambic tendency could derive from child-directed speech (CDS) was investigated by Santos (2007). The author compared the number of iambs produced by the adults surrounding the two children under observation (both aged 1;0 to 3;0) with the number of iambs produced by the same children. The author's results demonstrated that children produced more iambs than the adults and, hence, CDS might not be driving the early iambic tendency found in BP child data.

## 2. European Portuguese: previous studies

As far as early prosodic templates are concerned, EP was only partly studied. However, from the studies conducted thus far, EP-speaking children seem to show an early tendency for a prosodic template that is similar to the one observed in BP.

The study from Vigário, Freitas & Frota (2006) suggested that the truncation patterns in EP child speech were neutral. Both iambic and trochaic disyllables are equally frequent, as illustrated below:

(1) maçãs	'apples'	/me'sẽʃ/	[mʲʃa]	Marta, 1;5
(2) pato	'duck'	/patu/	[patʰ]	Marta, 1;2
(3) quadro	'painting'	/kwadru/	[kalu]	Marta, 1;7

Additionally, the authors found that WSW trisyllables might be truncated to S, SW or WS, thus suggesting a neutral tendency for trochaic or iambic templates:

(4) sapato	'shoe'	/se'patu/	['pa]	João, 1;7
(5) morangos	'strawberries'	/mu'rẽguʃ/	[me'ãguʃ]	Inês, 1;4
(6) boneca	'doll'	/bu'neke/	[me'ɲe]	Inês, 1;5
(7) mamoca	'little beast'	/me'mo:ke/	[me'mo:]	Inês, 1;5

In an acoustic study on intonational development, Frota & Vigário (2008) mention that, initially, stress shift favoring iambs is frequent and that it might be due to the child's attempt to produce prominences from higher prosodic levels, such as the phonological phrase and the intonational phrase. Later, the child produces prosodic words and stress falls on the right syllable. At that stage, trochees are produced as trochees and iambs are produced as iambs.

Based on the spontaneous speech productions of 5 EP-speaking children, Correia (2008, 2009) suggested that, indeed, productions with filler sounds at the left and reduplications that are iambic are highly frequent in EP. However, the truncation patterns do not necessarily favor iambic or trochaic words (7-10), and monosyllables are very frequent at the beginning (11-14):

(8) cartas	'cards'	/karteʃ/	['ka]	Inês, 1;6
(9) colher	'spoon'	/ku'leɾ/	['ke]	Inês, 1;6
(10) pé	'foot'	/pɛ/	['pɛ]	Inês, 1;1
(11) mãe	'mother'	/mẽʃ/	['ma]	Inês, 1;1

The author claims for a neutral start approach to word shape acquisition in EP and, in line with Scarpa (1999, 2001) for BP and Frota & Vigário (2008) for EP, the author suggests early iambs in EP are not iambic feet but, instead, the result of children's attempts to produce the accent from higher levels.

### 3. Goals, research questions and hypotheses:

Even though Portuguese (EP and BP) has a trochaic rhythm, the above-mentioned studies suggest the early prosodic template in Portuguese is not as straightforward as it is in other languages, namely Germanic languages such as Dutch or English. Since EP and BP have similar distribution of SW and WS words in the target language, we hypothesize that the results of the comparison between BP and EP child data will be similar. Additionally, based on previous studies (Baia, 2006, 2008; Santos, 2006, 2007), we hypothesize that spontaneous speech will display an iambic tendency, contrary to experimental studies, which will display a trochaic bias (Rapp, 1994). The observation of similar results in the two varieties, which display important phonetic differences but have the same phonological and

rhythmic properties, will raise important questions as to the key role of prosody and phonological rhythm during acquisition. Furthermore, the confirmation of different findings in experimental and naturalistic studies will contribute to highlight the methodological options used by the studies, in particular the consequences of given methodological options to the theoretical field of phonological acquisition. Finally, our findings might shed light on the dubious nature of prosodic acquisition in Portuguese, namely with respect to word shape and word stress acquisition.

## 4. Method

In this study, we investigated the initial prosodic template in two varieties of Portuguese – BP and EP - using both naturalistic and experimental data. A complementary set of data was taken into account for this study: data on EP consist in spontaneous speech from 5 monolingual children aged 0;11-2;6 (16.647 words: 12.556 nouns/ 4.091 verbs); data on BP consist in spontaneous speech from one BP-speaking child aged 1;5-3;0 (1177 words: 761 nouns/416 verbs). An experimental data set from 42 Brazilian children aged 1;5-3;0 was considered as well (1565 words – nouns). In the experimental study, a naming task was conducted for the following prosodic templates: SW, WS, SWW, WSW and WWS.

Three variables were stipulated based on BP data<sup>3</sup>:

Source	F0	P-Value
Age Group (AG)	,660	,523
Prosodic Template (PT)	196,057	,000
AG*PT	15,996	,000

**Table 2:** ANOVA – interaction between Age Group and Prosodic Template (BP)<sup>4</sup>

## 5. Results

In order to discuss the early prosodic template in Portuguese acquisition,

<sup>3</sup> AG\*PT meaning the interaction between the Age Group and the Prosodic Template.

<sup>4</sup> Three intervals are considered in the analysis. They were stipulated based on the BP data after running ANOVA test, which considered the age group (AG), the prosodic template (PT) and their interaction:

**Age groups (AG\*PT < 0,05):**

**AG1:** 0;11 – 1;5 years (EP)

**AG2:** 1;5 – 2;0 years (BP & EP)

**AG3:** 2;1 – 2;6 years (BP & EP)

**AG4:** 2;7 – 3;0 years (BP)

we will focus our analysis on the production of target disyllables.

## 5.1 Brazilian Portuguese

### 5.1.1 Experimental study

The results from the experimental study conducted on BP showed that SW words were mostly produced as SW:

(12) chave	‘key’	/ˈʃa.vi/	[ˈta.vɪ]	G.A 1;8
(13) copo	‘cup’	/ˈkɔ.pu/	[ˈkɔ.pu]	A.F 1;10

WS words were produced both as S and WS, though the latter form prevailed:

(14) sofá	‘couch’	/so.ˈfa/	[so.ˈfa]	P.S 2;5
(15) maçã	‘apple’	/ma.ˈsã/	[ma.ˈʂẽ]	G.F 2;6

SWW words were mostly truncated to SW:

(16) óculos	‘glasses’	/ˈɔ.ku.lus/	[ˈɔ.ku]	T.S 1;6
(17) árvore	‘tree’	/ˈar.vo.ɾi/	[ˈa.vɪ]	J.P 1;8

WSW words were produced as WS and SW, though there was a higher prevalence of the latter:

(18) boneca	‘doll’	/bo.ˈnɛ.ka/	[ˈɛ.ke]	E.S 1;8
(19) estrela	‘star’	/es.ˈtre.la/	[e.ˈte]	L.G 1;9

WWS words were mostly truncated as WS:

(20) bambolê	‘hoop’	/bã.bo.ˈle/	[bo.ˈle]	A.F. 1;10
(21) jacaré	‘alligator’	/ʒa.ka.ˈɾɛ/	[ka.ˈɛ]	J.H. 1;11

The following table summarizes the results found:

	Prosodic Template: > or < <sup>5</sup>	P-Value
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<sup>5</sup> 'SW > WS' indicates that SW words are more frequent than WS words. 'WS > SW' indicates

<b>AG 2</b>	<b>SW &gt; WS</b>	<b>&lt; 0.05</b>
<b>AG 3</b>	SW > WS	> 0.05
<b>AG 4</b>	SW > WS	> 0.05
<b>Total (Avg.)</b>	<b>SW &gt; WS</b>	<b>&lt; 0.05</b>

**Table 3:** *Experimental Study (BP) – SW x WS - F-Test*

As Table 3 shows, there is a predominance of SW but it is only significant in AG2 and in the total. These results seem to replicate Rapp's (1994) findings for BP early words.

### 5.1.2 Naturalistic study

In BP spontaneous speech, SW words were mostly produced as SW:

(22) carro	‘car’	/’ka.xu/	[’ka.u]	LUI 1;7
(23) pato	‘duck’	/’pa.tu/	[’pa.tu]	LUI 1;8

WS words were mostly produced as their target form:

(24) chapéu	‘hat’	/ʃa.’peu/	[ʃa.’peu]	LUI 1;11
(25) boné	‘cab’	/bo.’nɛ/	[bo.’nɛ]	LUI 1;11

After truncation, SWW words were mostly produced as SW:

(26) Mônica	‘name’	/’mo.ni.ka/	[’mõ.ke]	LUI 1;5
(27) música	‘music’	/’mu.zi.ka/	[’mu.zi]	LUI 2;5

WSW words were produced mainly as WS:

(28) bonito	‘beautiful’	/bo.’ni.tu/	[bu.’ni]	LUI 1;5
(29) sapato	‘shoes’	/sa.’pa.tu/	[pa.’tu]	LUI 1;8

When produced as disyllables, WWS words were produced as WS:

(30) avião	‘airplane’	/a.vi.’ãw/	[vi.’ãũ]	LUI 2;0
(31) coração	‘heart’	/ko.ra.’sãw/	[a.’sãũ]	LUI 2;2

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that WS words are more frequent than SW words. Results in bold indicates statistical significance between the variance of the two variables analyzed (number of SW and number of WS words).

The following table summarizes the results<sup>6</sup>:

	<b>Prosodic Template: &gt; or &lt;</b>	<b>P-Value</b>
<b>AG 2 (N)</b>	SW < WS	> 0.05
<b>AG 3 (N)</b>	SW > WS	> 0.05
<b>AG 4 (N)</b>	<b>SW &gt; WS</b>	<b>&lt; 0.05</b>
<b>Total (N) (Avg.)</b>	SW > WS	> 0.05
<b>AG 2 (V)</b>	SW < WS	> 0.05
<b>AG 3 (V)</b>	SW < WS	> 0.05
<b>AG 4 (V)</b>	SW > WS	> 0.05
<b>Total (V) (Avg.)</b>	SW < WS	> 0.05
<b>AG 2 (N+V)</b>	<b>SW &lt; WS</b>	<b>&lt; 0.05</b>
<b>AG 3 (N+V)</b>	SW > WS	> 0.05
<b>AG 4 (N+V)</b>	SW > WS	> 0.05
<b>Total (N+V) (Avg.)</b>	SW < WS	> 0.05

**Table 4:** *Naturalistic Study (BP) – SW x WS – F-Test*

As observed in Table 4, the naturalistic study shows an early tendency for iambs. Iambs are significantly more frequent than trochees in AG2, but only when nouns and verbs are plot together, i.e., in AG2 (N+V).

## 5.2 European Portuguese

In EP, early words tend to have a WS shape. These words are mostly reduplications and productions with filler sounds at the left-edge of the circumscribed stressed syllable.

- (32) papá 'daddy' /pe'pa/ [pa'pa] Clara, 1;2  
 (33) pinguim 'penguin' /pi'gwi/ [e'pe] Clara, 1;3

Later, both WS and SW targets emerge and are equally frequent.

- (34) água 'water' /ag'w/ ['akə] Clara, 1;4  
 (35) aqui 'here' /e'ki/ [e'ki] Clara, 1;5

In a subsequent stage, SW words tend to be significantly more frequent than WS, but that is mostly due to the higher production rate of SW verb forms.

<sup>6</sup> N stands for noun and V stands for verb.



(36) olha	'look!'	/ɔlə/	[ˈɔ:lɐ]	Clara, 1;9
(37) gosta	's/he likes'	/ɡɔʃtɐ/	[ˈɡɔ:tɐ]	Clara, 1;9

Table 5 summarizes the results for EP spontaneous data:

	Prosodic Template: > or <	P-Value
<b>AG 1 (N)</b>	<b>SW &lt; WS</b>	<b>&lt; 0.05</b>
<b>AG 2 (N)</b>	SW < WS	> 0.05
<b>AG 3 (N)</b>	SW < WS	> 0.05
<b>Total (N) (Avg.)</b>	SW < WS	> 0.05
<b>AG 1 (V)</b>	<b>SW &lt; WS</b>	<b>&lt; 0.05</b>
<b>AG 2 (V)</b>	SW < WS	> 0.05
<b>AG 3 (V)</b>	<b>SW &gt; WS</b>	<b>&lt; 0.05</b>
<b>Total (V) (Avg.)</b>	SW > WS	> 0.05
<b>AG 1 (N+V)</b>	<b>SW &lt; WS</b>	<b>&lt; 0.05</b>
<b>AG 2 (N+V)</b>	SW < WS	> 0.05
<b>AG 3 (N+V)</b>	SW > WS	> 0.05
<b>Total (N+V) (Avg.)</b>	SW < WS	> 0.05

**Table 5:** *Naturalistic Study (EP) – SW x WS – F- test*

Table 5 shows that a higher frequency for WS words was attested in the youngest age group (AG1), irrespective of the word class. Later, in AG2, iambs still seem to be more frequent in both word classes, though the difference between SW and WS is not significant. Finally, in AG3, SW becomes more frequent (cf. AG3, V and N+V). In fact, the difference between SW and WS verb forms in AG3 is statistically significant, which appear to contribute for the overall trochaic tendency observed at that stage.

### 5.3 The comparison between Brazilian and European Portuguese

In this section, the results found in BP and EP are compared. The following table summarizes the findings regarding the prosodic template prevailing in each age group of the two Portuguese varieties under investigation.

	BP (experimental)	BP (naturalistic)	EP (naturalistic)
<b>AG 1 (N)</b>	---	---	<b>WS</b>
<b>AG 2 (N)</b>	<b>SW</b>	WS	WS

<b>AG 3 (N)</b>	SW	SW	WS
<b>AG4 (N)</b>	SW	<b>SW</b>	---
<b>Total (N) (Avg.)</b>	<b>SW</b>	SW	WS
<b>AG 1 (V)</b>	---	---	<b>WS</b>
<b>AG 2 (V)</b>	---	<b>WS</b>	<b>WS</b>
<b>AG 3 (V)</b>	---	WS	<b>SW</b>
<b>AG4 (V)</b>	---	SW	---
<b>Total (V) (Avg.)</b>	---	WS	SW
<b>AG 1 (N+V)</b>	---	---	<b>WS</b>
<b>AG 2 (N+V)</b>	---	<b>WS</b>	<b>WS</b>
<b>AG 3 (N+V)</b>	---	SW	SW
<b>AG 4 (N+V)</b>	---	SW	---
<b>Total (N+V) (Avg.)</b>	---	<b>WS</b>	<b>WS</b>

**Table 6:** *Initial prosodic template in BP and EP*

As we can see, BP and EP present an initial tendency for WS words (AG1 and AG2) in their early data (see grey lines). Naturalistic results from BP and EP differ from the experimental one, so that there was the same discrepancy found in BP data.

## 6. Discussion

Hypothesis 1: *The same bias will be found in BP and EP data.* Spontaneous data suggest that early productions in Portuguese, both EP and BP, are iambic. Portuguese children had an iambic bias in AG1 and 2 (though only AG1 presented significant differences -  $<.05$ ). Later (in AG 3), a trochaic tendency prevailed (significantly different in verbs -  $<.05$ ). Despite general results are presented, individual data mirror the tendency found: all children went to an initial period where iambic productions were observed, followed by a period predominated by trochees. In EP data, the iambic tendency appears to be due to a high frequency of reduplication and/or filler insertion strategy, produced by Portuguese children. In BP data, the reason for early iambs seems to be the same. Therefore, hypothesis 1 was confirmed.

Hypothesis 2: *Different methods predict different tendencies: naturalistic data – iambic (BP & EP); experimental data - trochaic (BP).* The experimental data from BP favors trochees (AG2 and total:  $p < .05$ ) and the naturalistic study shows a bias favoring iambs mainly when the analysis considers nouns and verbs together (AG2:  $<.05$ ). It was noted that the number of iambs decreases if the verbs are kept out of the data. In EP naturalistic data, it was observed a similar behavior. Thus, the difference between the results of the experimental study and observational ones

seems to be due to the method used, in particular to the lexical inventory considered in the analysis. Therefore, our hypothesis 2 was confirmed.

Overall results suggest that the trochaic bias claimed by some authors (see Allen & Hawkins, 1979, 1980; Fikkert, 1994; Gerken, 1994) is not universal.

## 7. Final Remarks

From the data presented above, we are lead to believe that the study on word shape and word stress and the analyses on early prosodic patterns must take into account all types of data (both experimental and spontaneous, i.e. words from different grammatical classes together). In fact, the two types of data appear to be complementary and provide full information on children's phonological processing during the early stages of acquisition.

The results found in this study confirm and are consistent with the findings by Santos (2007), who argues that there is not a universal prosodic template. For that reason, we find a trochaic tendency in Germanic languages and iambic productions in BP and EP data. Either that is due to prominences within the prosodic word level or not, that is a different matter, which we will leave for future investigation. Despite the discrepancy within Portuguese data (experimental results versus naturalistic ones), an early iambic tendency that is not found in Germanic languages is observed in Portuguese acquisition data. Based on our results, we claim that the trochaic bias claimed by some authors (Allen & Hawkins, 1979, 1980; Fikkert, 1994; Gerken, 1994) is not universal, but assigned on a language-specific basis.

## 8. References

- Adam, G. & Bat-El, O. (2007) "The trochaic is universal: evidence from Hebrew" in *Generative approaches to language acquisition*, Barcelona.
- Albano, E. C. (2001) - *O gesto e suas bordas: esboço de fonologia acústico-articulatória do português brasileiro*. Campinas/SP: Mercado de Letras, São Paulo: Associação de Leitura do Brasil- ALB; FAPESP.
- Allen, G. D & Hawkins, S. (1979) – "Trochaic rhythm in children's speech" in H. Holien & P. Hollien, eds, *Current issues in the phonetic sciences II: Proceedings of the IPS-77 Congres (Amsterdam: North Holland)*, 173-85.
- Allen, G.D. & Hawkins, S. (1980) "Phonological rhythm: definition and development", G. Yeni-Konishian; J.F. Kavanagh & C.A. Ferguson, eds, *Child Phonology vol. 1: production*, NY Academic Press, 227-256.
- Baia, M.F.A. (2008) – *O modelo prosódico inicial: uma questão metodológica?* Master dissertation, USP.

- Cintra, G. (1997) – “Distribuição de padrões acentuais no vocábulo em português” em *Confluência* vol. 5. n. 3 83-92 ed. Unesp Assis.
- Correia, S. Costa, T. & Freitas, M.J. (2006) - *O pé no PE*. Comunicação no 7º ENAL.
- Correia, S. (2008). Acoustic (lack of) evidence for word stress in the early disyllabic productions of two Portuguese children. In Gavarró, A. & Freitas, M. J. (eds). *Language Acquisition and Development. Proceedings of Gala 2007*. Newcastle: Cambridge Scholars Publishing. 123-132.
- Correia, S. (in prep.). *The acquisition of primary word stress in European Portuguese*. PhD Dissertation. University of Lisbon.
- Demuth, K. & Johnson, M. (2003) Truncation to subminimal words in early French in *Canadian Journal of Linguistics*. 48 (3/4): 211:241.
- Fikkert, P. (1994). *On the acquisition of prosodic structure*. Phd. Dissertation, HIL dissertations 6, Leiden University. The Hague: Holland Academic Graphics.
- Gerken, L. A. (1994)- “A metrical template account of children’s weak syllable omissions from multisyllabic words” em *Journal of Child Language*, vol.21 565-584, Cambridge University Press.
- Hochberg, J. G. (1988) First steps in the acquisition of Spanish stress. *Journal of Child Language*, n. 15, 273-292 Cambridge University Press.
- Kehoe, M. & Stoel-Gammon, C. (1997) “The acquisition of prosodic structure: An investigation of current accounts of children’s prosodic development”. *Language*, Volume 73, Number 1.
- Rapp, C. (1994) – *A Elisão de Sílabas Fracas nos Estágios Iniciais da Aquisição da Fonologia do Português*. Master dissertation. Bahia: UFB.
- Santos, R.S. (2007) – *A aquisição prosódica do português brasileiro de 1 a 3 anos: padrões de palavra e processos de sândi externo*. São Paulo: Universidade de São Paulo. Thesis.
- Vihman, M. M; DePaolis, R. A.; Davis, B. L. (1998) “Is there a ‘Trochaic Bias’ in Early Word Learning? Evidence from infant production in English and French” in *Child Development*, volume 69, n. 4, pg 935-949.